REMARKS/ARGUMENTS

This is in full and timely response to the final Office Action mailed August 6, 2003 (Paper No. 11). No claims were amended. Claims 1-79 are pending in this application, with claims 1-13 and 74-76 pending for the Examiner's reconsideration, with claims 1, 2, 5, 14, 34, 54 and 74-79 being independent. Reexamination and reconsideration in light of the following remarks is respectfully requested.

Applicants thank the examiner for acknowledging that claims 8, 9, 12 and 13 are allowable. However, as Applicants believe that all pending claims are allowable and in condition for allowance, Applicants respectfully decline to present these claims in independent form at this time.

Election/Restriction:

Applicants traverse the examiner's holding that the election was made without traverse. In the previous response, Applicants specifically affirmed the telephonic election of claims 1-13 and 74-76 apparatus claims with traverse. As the examiner is aware, Applicants in their oral election elected apparatus claims, with non-elected claims to be held in abeyance. When the apparatus claims are allowed, the non-elected method claims automatically come back in for consideration. See Rejoinder, MPEP §821.04. Accordingly, the examiner's changing of Applicants' election is without foundation and erroneous. Notice confirming the error and acknowledging the election with traverse in the next action is requested.

Rejections under 35 U.S.C. §102

Claims 1, 5-7, 10 and 11 are rejected under 35 USC §102(b) as being anticipated by U.S. Patent No. 5,828,163 to Jones et al. Applicants respectfully traverse this rejection.

Claim 1 recites an electron emission device comprising; (a) a conductive layer with a carbon film selective-growth region formed on a surface thereof, and (b) an electron emitting portion composed of a carbon film formed on the carbon film selective-growth region, wherein the carbon film selective-growth region is a portion of the conductive layer onto which at least one of metal particles, metal thin layer and organometallic compound thin layer adhere.

Claim 5 recites a cold cathode field emission device comprising: (a) a cathode electrode formed on a supporting substrate; (b) a first gate electrode formed above a first portion of the cathode electrode; (c) a second gate electrode formed above a second portion of the cathode electrode, the second portion of the cathode electrode separated from the first portion of the cathode electrode by a third portion of the cathode electrode; (d) a first opening portion between the first gate electrode and the second gate electrode; (e) a carbon film selective-growth region formed at least on a surface of the third portion of the cathode electrode; and (f) an electron emitting portion having a carbon film formed on the carbon film selective-growth region.

The claim term "carbon film selective-growth region is defined variously throughout the specification. For example, the carbon film selective-growth region is that "portion of the conductive layer or the cathode electrode onto a surface of which portion metal particles adhere, or that portion of the conductive layer or the cathode electrode on a surface of which portion a thin metal layer or an organometallic compound thin layer is formed. For making the selective growth of the carbon film on the carbon film selective-growth region more reliable, desirably, the surface of the carbon film selective-growth region has sulfur (S), boron (B) or phosphorus (P) adhering thereto." See page 10, line 36 to page 11, line 9.

Jones et al. '163 discloses a field emitter device with a current limiter structure. This structure has many similarities to the structure disclosed is the present application in the Background and Figure 17. The Office Action at page 3, lines 7-8 alleges that the claimed carbon film selective growth region is part number 30. However, part number 30 is disclosed in Jones et al. '163 as microtip electron emitters. See col. 2, line 62. These conical electron emitting portions were discussed in detail in the specification as part number 115.

For example:

> Fig. 17 shows an example of constitution of a cold cathode field emission display (to be sometimes referred to as "display" hereinafter) using field emission devices. The field emission device shown in Fig. 17 is a so-called Spindt type field emission device having a conical electron emitting portion. Such a field emission device comprises a cathode electrode 111 formed on a supporting substrate 110, an insulating layer 112 formed on the supporting substrate 110 and the cathode electrode 111, a gate electrode 113

> formed on the insulating layer 112, an opening portion 114 formed in the gate electrode 113 and the insulating layer 112, and a conical electron emitting portion 115 formed on the cathode electrode 111 positioned in a bottom portion of the opening portion 114. (Emphasis added). See page 2, lines 1-15.
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> In the above display constitution, it is effective to sharpen the top end portion of the electron emitting portion for attaining a large current of emitted electrons at a low driving voltage, and from this viewpoint, the electron emitting portion 115 of the above Spindt type field emission device can be said to have excellent performances. However, the formation of the conical electron emitting portion 115 requires advanced processing techniques, and with an increase in the area of the effective field, it is beginning to be difficult to form the electron emitting portions 115 uniformly all over the effective field since the number of the electron emitting portions 115 totals up to tens of millions in some cases. See page 4, lies 5-18.
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> There has been therefore proposed a so-called flat-surface type field emission device which uses a flat electron emitting portion exposed in a bottom portion of an opening portion without using the conical electron emitting portion. The electron emitting portion of the flat-surface type field emission device is formed on a cathode electrode, and it is composed of a material having a lower work function than a material constituting the cathode electrode for achieving a high current of emitted electrons even if the electron emitting portion is flat. In recent years, it has been proposed to use a carbon material as the above material. See page 4, lines 19-30.

Regarding claim 1, at no point does Jones et al. '163 disclose, teach or suggest (a) a conductive layer with a carbon film selective-growth region formed on a surface thereof, and (b) an electron emitting portion composed of a carbon film formed on the carbon film selective-growth region, wherein the carbon film selective-growth region is a portion of the conductive layer onto which at least one of metal particles, metal thin layer and organometallic compound thin layer adhere.

Regarding claim 5, at no point does Jones et al. '163 disclose, teach or suggest (e) a carbon film selective-growth region formed at least on a surface of the third portion of the cathode electrode; and (f) an electron emitting portion having a carbon film formed on the carbon film selective-growth region.

Still further, the carbon film selective-growth region, as defined in the specification and discussed above, is not disclosed, taught or suggested by Jones et al. '163.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Jones et al. '163 fail to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claim 1 and 5, Jones et al. '163 cannot anticipate the claims. At least in view of the foregoing, claims 1 and 5 are allowable, and the rejection should be reconsidered and withdrawn.

Dependent claims 6, 7, 10 and 11 depending from claim 5 are also allowable for the reasons above. For example, the Office Action alleges that the carbon film positioned in a bottom portion of the second opening portion recited in claim 11 is the microtip electron emitter 30 of Jones et al. '163. However, there is no support in Jones et al. '163 that the microtip electron emitter 30 can be a carbon film as disclosed in the present application. Moreover, these claims are further distinguished by the materials recited therein, particularly within the claimed combination. Withdrawal of the §102(b) rejection is therefore respectfully solicited.

Claims 2-4 and 74-76 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,726,524 to Debe. Applicants respectfully traverse this rejection.

Claim 2 recites a cold cathode field emission device comprising; (a) a cathode electrode formed on a supporting substrate; (b) a first gate electrode formed above a first portion of the cathode electrode; (c) a second gate electrode formed above a second portion of the cathode electrode, the second portion of the cathode electrode separated from the first portion of the cathode electrode by a third portion of the cathode electrode; (d) a first opening portion between the first gate electrode and the second gate electrode; and (e) an electron emitting portion having a carbon film formed on a surface of the third portion of the cathode electrode.

Claim 74 recites a cold cathode field emission display comprising a plurality of pixels, each pixel comprising a cold cathode field emission device, an anode electrode and a fluorescent layer, the anode electrode and the fluorescent layer being formed on a substrate so as to be opposed to the cold cathode field emission device, and the cold cathode field emission device comprising; (a) a conductive layer with a carbon film selective-growth region formed on a surface thereof, and (b) an electron emitting portion composed of a carbon film formed on the carbon film selective-growth region.

Claim 75 recites a cold cathode field emission display comprising a plurality of pixels, each pixel comprising a cold cathode field emission device, an anode electrode and a fluorescent layer, the anode electrode and the fluorescent layer being formed on a substrate so as to be opposed to the cold cathode field emission device, and the cold cathode field emission device comprising; (a) a cathode electrode formed on a supporting substrate; (b) a first gate electrode formed above a first portion of the cathode electrode; (c) a second gate electrode formed above a second portion of the cathode electrode, the second portion of the cathode electrode separated from the first portion of the cathode electrode by a third portion of the cathode electrode; (d) an opening portion between the first gate electrode and the second gate electrode; and (e) an electron emitting portion having a carbon film formed on a surface of the third portion of the cathode electrode.

Claim 76 recites a cold cathode field emission display comprising a plurality of pixels, each pixel comprising a cold cathode field emission device, an anode electrode and a fluorescent layer, the anode electrode and the fluorescent layer being formed on a substrate so as to be opposed to the cold cathode field emission device, and the cold cathode field emission device comprising; (a) a cathode electrode formed on a supporting substrate; (b) a first gate electrode formed above a first portion of the cathode electrode; (c) a second gate electrode formed above a second portion of the cathode electrode, the second portion of the cathode electrode separated from the first portion of the cathode electrode by a third portion of the cathode electrode; (d) an opening portion between the first gate electrode and the second gate electrode; (e) a carbon film selective-growth region formed at least on a surface of the third portion of the cathode electrode; and (f) an electron emitting portion having a carbon film formed on the carbon film selective-growth region.

The claim term "carbon film selective-growth region" is defined variously throughout the specification. For example, the carbon film selective-growth region is that "portion of the conductive layer or the cathode electrode onto a surface of which portion metal particles adhere, or that portion of the conductive layer or the cathode electrode on a surface of which portion a thin metal layer or an organometallic compound thin layer is formed. For making the selective growth of the carbon film on the carbon film selective-growth region more reliable, desirable, the surface of the carbon film selective-growth region has sulfur (S), boron (B) or phosphorus (P) adhering thereto." See page 10, line 36 to page 11, line 9.

In the Response to Arguments at page 9, lines 4+ of the Office Action, the examiner alleges: "The definition of a carbon film selective growth region can only be found in the specification. In re Prater states "Limitation appearing in the specification but not recited in the claim are not to be read into the claims."" It is clear the examiner is confusing the two distinct issues: first that applicants can define a term that is not "repugnant" to the normal definition, and second being claim limitations. The examiner clearly acknowledges that the definition of a carbon film selective growth region can only be found in the specification. This is undisputed. The examiner is attempting to go between the specification and the claims in a manner which is not permissible. That is, the claim term is defined in the specification, and the examiner has not alleged what part, if any, of the claim definition contains a limitation that is argued and must be recited in the claim. In other words, Applicants are not presenting arguments that narrow, broaden or change the definition of the term, therefore the definition stands on its own. Still further, if the examiner believes that the elements referred to in the term definition are required to be in the claim, then this is more appropriately addressed as a §112 rejection. As there are no claim amendments in this Response, any further rejection must be non-final.

Debe '524 discloses an electric field emission device whereby the cathode electrode has a microstructure layer conformally coated with one or more layers of an electron emitting material, the overcoated material being disposed on at least a portion of the microstructures.

The office action alleges that the carbon film 38 is the claimed carbon film selective-growth region. Applicants disagree, as nowhere in Debe '524 is such a carbon film selective-growth region disclosed, taught or suggested. Rather, Debe '524 discloses depositing the carbon film 38 on the conductor 40 without any such growth region as discussed above.

As discussed above, the examiner de facto acknowledges the deficiency in the Debe '524, as the definition of a carbon film selective growth region can only be found in Applicants specification.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Debe '524 fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 1, 2 and 74-76, Debe

'524 cannot anticipate the claims. At least in view of the foregoing, claims 1, 2 and 74-74 are allowable, and the rejection should be reconsidered and withdrawn.

Dependent claims 3 and 4 depending from claim 1, are also allowable for the reasons above. Moreover, these claims are further distinguished by the materials recited therein, particularly within the claimed combination. Withdrawal of the §102(b) rejection is therefore respectfully solicited.

Claims 5-13 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,608,283 to Twichell et al. Applicants respectfully traverse this rejection.

Claim 5 recites a cold cathode field emission device comprising; (a) a cathode electrode formed on a supporting substrate; (b) a first gate electrode formed above a first portion of the cathode electrode; (c) a second gate electrode formed above a second portion of the cathode electrode, the second portion of the cathode electrode separated from the first portion of the cathode electrode by a third portion of the cathode electrode; (d) a first opening portion between the first gate electrode and the second gate electrode; (e) a carbon film selective-growth region formed at least on a surface of the third portion of the cathode electrode; and (f) an electron emitting portion having a carbon film formed on the carbon film selective-growth region.

The claim term "carbon film selective-growth region is defined variously throughout the specification. For example, the carbon film selective-growth region is that "portion of the conductive layer or the cathode electrode onto a surface of which portion metal particles adhere, or that portion of the conductive layer or the cathode electrode on a surface of which portion a thin metal layer or an organometallic compound thin layer is formed. For making the selective growth of the carbon film on the carbon film selective-growth region more reliable, desirable, the surface of the carbon film selective-growth region has sulfur (S), boron (B) or phosphorus (P) adhering thereto." See page 10, line 36 to page 11, line 9.

Twichell et al. '283 discloses an electron emitting device utilizing electron-emissive particles which typically contain carbon. However, Twichell et al. '283 do not disclose, teach or suggest a carbon film selective-growth region as claimed. Rather, Twichell et al. '283 discloses depositing carbon carbon-containing particle 22 on an area 20. The area 20 is not the carbon film selective-growth region as claimed discussed above.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Twichell et al. '283 fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claim5, Twichell et al. '283 cannot anticipate the claim. At least in view of the foregoing, claim 5 is allowable, and the rejection should be reconsidered and withdrawn.

Dependent claims 6-13 depending from claim 5, are also allowable for the reasons above. Moreover, these claims are further distinguished by the materials recited therein, particularly within the claimed combination. Withdrawal of the §102(b) rejection is therefore respectfully solicited.

Conclusion

For the foregoing reasons, claims 1-13 and 74-76 are allowable, and the present application containing claims 1-79 is in condition for allowance. Accordingly, favorable reexamination and reconsideration of the application in light of these amendments and remarks is courteously solicited. If the examiner has any comments or suggestions that would place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number below.

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Respectfully submitted,

By _____
Ronald P. Kananen
Registration No.: 24,104
Robert S. Green
Registration No. 41,800
RADER, FISHMAN & GRAUER PLLC
1233 20th Street, N.W., Suite 501
Washington, DC 20036
(202) 955-3750
Attorneys for Applicant
DC134864

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